



# RESPIRATORY PROTECTION

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**T-235**

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# CCR Title 8 Section 5144

(California Code of Regulations)

The New Respirator Standard

- Effective dates:
  - November 23, 1998
  - Compliance by May 22, 1999
  - Yes you are overdue to write your plan
- Respiratory protection for tuberculosis subject to the old std (T8CCR 5147)
- Enforced by Cal/OSHA

# Major Impacts

- First major update since the 70's
- Much more detailed
- Reflects changes in technology and understanding
- Allows for a more consistent respiratory protection program regardless of contaminant

# **RESPIRATORY PROTECTION PROGRAM**

# Exposure Assessment

- Identify harmful exposures
- Monitoring potentially harmful airborne contaminants
- Complies with Injury Illness Prevention Program (IIPP) CCR Title 8 Section 3203

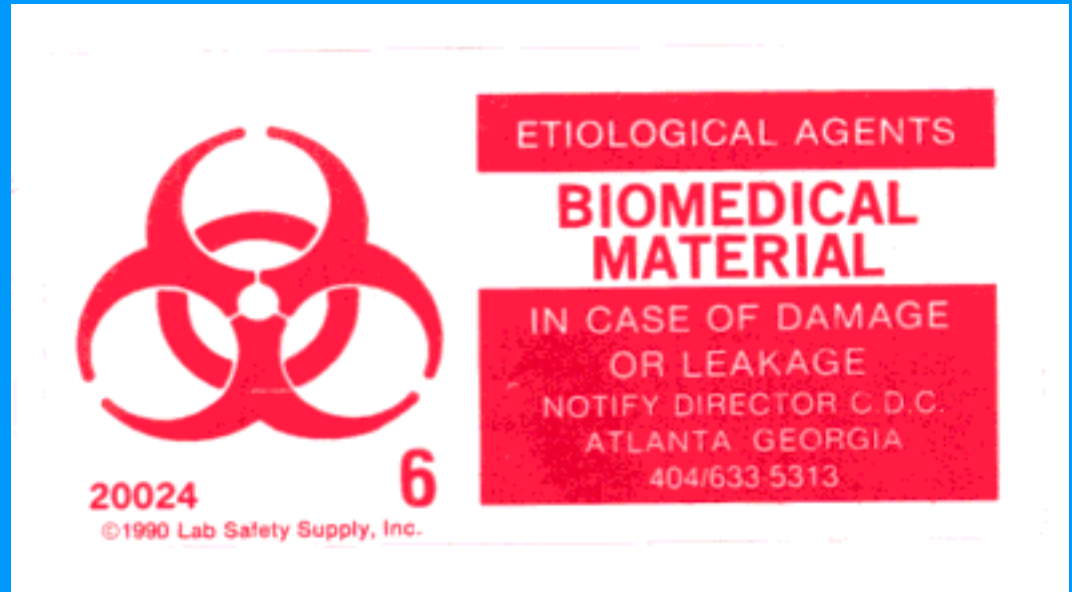
# Types of Airborne Contaminants

- Particulate Chemical Contaminants
  - dusts
  - fumes
  - mists
  - fibers
- Gaseous Chemical Contaminants
  - gases
  - vapors



# Types of Airborne Contaminants

- Biological Contaminants
  - TB Standard
  - Hospitals
  - etc



# Controlling Harmful Exposures

- Engineering Controls
- Administrative Controls
- Personal Protective Equipment (PPE)
  - Respirators





# Elements of a Written Respiratory Protection Program

- Selecting and issuing respirators
- Training employees
  - Limitations of the respirators
- Conducting Respirator facepiece fit tests
- Inspecting Respirators
- Cleaning, Sanitization, & Maintenance
- Storing
- Medical Surveillance

# Types of Respirators

- Air Purifying Respirators (APR)
  - Negative pressure elastomeric (pull-tight straps)
  - Powered air purifying (PAPR)
  - Dust masks
- Supplied Air Respirators (SAR)
  - Self contained breathing apparatus (SCBA)
  - Airline system



# Selection of APR vs. SAR

1) Greater than 19.5% Oxygen

2) Known Contaminant

3) Known Concentration of Contaminant

- No use of APR in Immediately Dangerous to Life and Health (IDLH) atmospheres

4) Adequate Warning Properties

# Protection Factor (PF) Calculations

$$PF = \frac{\text{Concentration Outside Mask}}{\text{Concentration Inside Mask}}$$

Example:

- Full face APR, PF = 50
- PEL for Methyl Isocyanate = 0.02 ppm  
(Permissible Exposure Limit)
- Ambient concentration = 3 ppm
- Can you use this respirator?

# SUMMARY OF THE STANDARD

## (a) Permissible Practices

- Hierarchy of controls
  - Engineering, Administrative, vs. PPE use
- Applicable and suitable respirators
  - Employers must provide employees with respirators that are: “Applicable and Suitable” for the purpose intended, when such equipment is necessary to protect the health of the employee.

## (b) Definitions

- This section contains definitions of important terms used in the standard.

## (c) Respiratory Protection Program

- Written and *work-site* specific
- Program administrator (suitably trained)
- Respirators, training, and medical evaluations at no cost
- 3 categories of respirator wearers
  - required use
  - voluntary use (other than dust masks)
  - voluntary use (dust masks)



## (d) Selection of Respirators

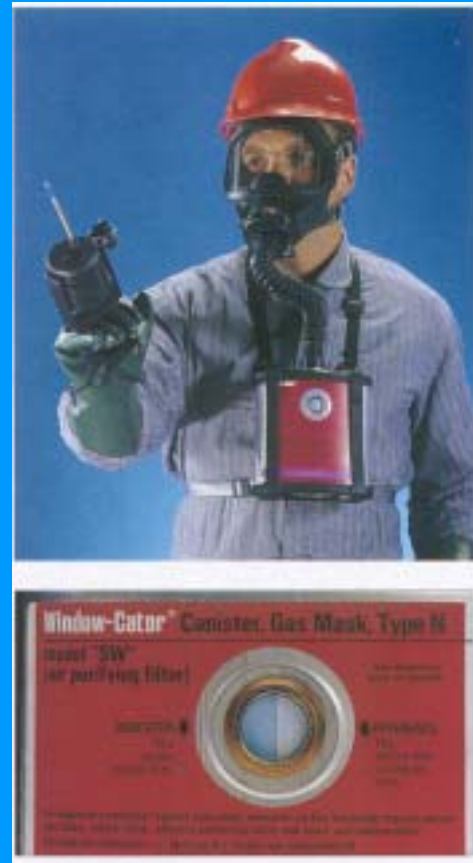
- NIOSH certified
- Appropriate with respect to hazards
- Reasonable estimate of exposure
- Assume IDLH atmosphere
  - unless confirmed otherwise by monitoring
- Sufficient number (different brands and sizes) of respirators for acceptable fit

## (d) Selection of Respirators (cont)

- Selection criteria for IDLH atmosphere
  - Full facepiece pressure demand SCBA (minimum 30 minutes)
  - Full facepiece airline with auxiliary SCBA
  - NIOSH certified for escape, if escape only
- All O<sub>2</sub> deficient atmospheres are IDLH

# (d) Selection of Respirators (cont)

- Gases/vapors
  - atmosphere supplying respirator
  - APRs
    - Must be equipped with End of Service Life Indicators, or
    - Change schedule



## (d) Selection of Respirators (cont)

- Particulates
  - Supplied air respirators, or

- APR with
  - N-100,
  - R-100, or
  - P-100 filter

Resistance to Degradation	Efficiency (%)		
	95	99	100
Not Resistant (N)	N95	N99	N100
Resistant (R)	R95	R99	R100
Oil Proof (P)	P95	P99	P100

- NIOSH certified filters

## (e) Medical Evaluations

- Provided prior to use or fit test
- Performed by a physician or licensed health care professional (PLHCP)
- Written recommendations from PLHCP
- Additional medical evaluations, as required

# (e) Medical Evaluations

- Questionnaire and exam



Appendix C to Sec. 1910.134 OSHA Respirator Medical Evaluation Questionnaire	
<p><b>To the employer:</b> Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.</p> <p><b>To the employee:</b> Can you read? (circle one): Yes / No</p> <p>Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.</p> <p><b>Part A. Section 1. (Mandatory)</b> The following information must be provided by every employee who has been selected to use any type of respirator (please print).</p> <p>1. Today's date: _____</p> <p>2. Your name: _____</p> <p>3. Your age (to nearest year): _____</p> <p>4. Sex (circle one): Male / Female</p> <p>5. Your height: _____ ft. _____ in.</p> <p>6. Your weight: _____ lbs.</p> <p>7. Your job title: _____</p> <p>8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): (____) _____</p> <p>9. The best time to phone you at this number: _____</p> <p>10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes / No</p> <p>11. Check the type of respirator you will use (you can check more than one category):</p> <p>a. <input type="checkbox"/> N, R, or P disposable respirator (filter-mask, non-cartridge type only).</p> <p>b. <input type="checkbox"/> Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).</p> <p>12. Have you worn a respirator (circle one): Yes / No If "yes," what type(s): _____</p>	<p><b>Part A. Section 2. (Mandatory)</b> Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").</p> <p>1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes / No</p> <p>2. Have you ever had any of the following conditions?</p> <p>a. Seizures (fits): Yes / No</p> <p>b. Diabetes (sugar disease): Yes / No</p> <p>c. Allergic reactions that interfere with your breathing: Yes / No</p> <p>d. Claustrophobia (fear of closed-in places): Yes / No</p> <p>e. Trouble smelling odors: Yes / No</p> <p>3. Have you ever had any of the following pulmonary or lung problems?</p> <p>a. Asbestosis: Yes / No</p> <p>b. Asthma: Yes / No</p> <p>c. Chronic bronchitis: Yes / No</p> <p>d. Emphysema: Yes / No</p> <p>e. Pneumonia: Yes / No</p> <p>f. Tuberculosis: Yes / No</p> <p>g. Silicosis: Yes / No</p> <p>h. Pneumothorax (collapsed lung): Yes / No</p> <p>i. Lung cancer: Yes / No</p> <p>j. Broken ribs: Yes / No</p> <p>k. Any chest injuries or surgeries: Yes / No</p> <p>l. Any other lung problem that you've been told about: Yes / No</p> <p>4. Do you currently have any of the following symptoms of pulmonary or lung illness?</p> <p>a. Shortness of breath: Yes / No</p> <p>b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes / No</p> <p>c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes / No</p> <p>d. Have to stop for breath when walking at your own pace on level ground: Yes / No</p> <p>e. Shortness of breath when washing or dressing yourself: Yes / No</p>

## (e) Medical Evaluations

No requirement for annual medical evaluation, however additional medical evaluations are required when:

- Employee reports medical signs or symptoms
- PLHCP, supervisor, or Administrator recommends a re-evaluation
- Information from respirator program, including observations indicate a need to re-evaluate
- Changes occur in workplace conditions

# A GOOD FIT IS KEY TO OBTAINING PROTECTION

Two ways

- Fit Check
- Fit Test



# FIT CHECK

- Performed by the wearer
- Perform Positive and Negative checks each time the wearer puts on the respirator



## (f) Fit Testing

- For all required use of **Negative or Positive pressure tight fitting respirators:**
  - Initially,
  - annually,
  - at additional times,
  - or when there is a physical change to the employee

## (f) Fit Testing

- OSHA accepted
  - Qualitative fit test (QLFT) or,
  - Quantitative fit test (QNFT) procedures

## (f) Qualitative - Fit Testing (QLFT)

- Negative pressure APRs that must achieve a minimum fit factor of less than 100
- If fit factor greater than 100 is necessary
  - must use quantitative fit test
- **Do Not use Hood with Irritating Smoke test**



## (f) Qualitative - Fit Testing



# (f) Quantitative - Fit Testing (QNFT)

- Minimum fit factors
  - 1/2 face = 100
  - Full face = 500
- PAPRs, SCBAs, and Airlines
  - Convert to APR and test in the negative mode by **either QLFT or QNFT**





## (f) Fit Testing - Quantitative



# (g) Use of Respirators

## 5144 (g) (1) (A)

The employer shall **not** permit respirators with tight-fitting face pieces to be worn by employees who have:

- 1) Facial hair that comes between the sealing surface or facepiece and the face or that interferes with valve function
- 2) Any condition that interferes with the face-to facepiece seal or valve function





# **(g) Use of Respirators**

## **5144 (g) (2) and (3)**

### **2) Continuing respirator effectiveness**

- **Surveillance of work area**
- **Employees know when to leave**

### **3) Procedures for IDLH Atmospheres**

- **One or more employees outside**
- **Visual, voice or signal line communications**
- **Rescue and notification in place before entry is made.**



# (g) Use of Respirators

## 5144 (g) (4)

Procedures for interior structural firefighting  
in addition to everything in (g)(3)

- At least two must enter and remain in contact at all times
- At least two employees outside
- All employees engaged in interior firefighting use SCBAs
- *Nothing to preclude emergency rescue*

# (h) Maintenance and Care of Respirators

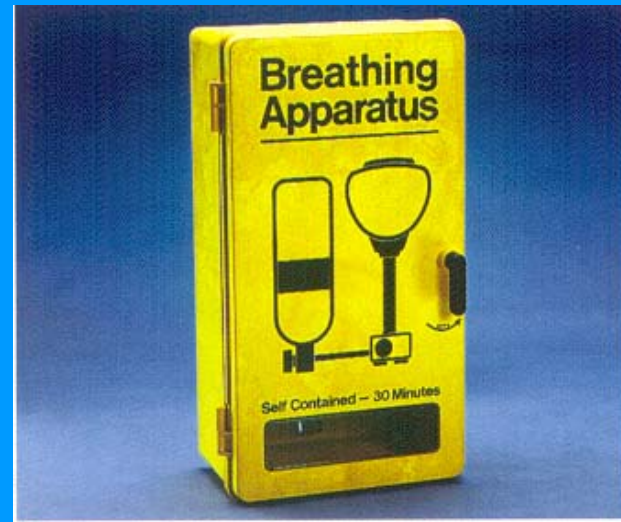
- Clean and disinfect according to procedures
- Disinfect before being by a different person
- Maintain in sanitary condition



# RESPIRATOR INSPECTIONS

- Inspect before and after each use
- Inspection frequency specified
- Repairs by properly trained persons
- Do not use a respirator that fails inspection (e.g., is damaged or is missing parts)

## (h) Maintenance and Care of Respirators - Storing



# (i) Breathing Air Quality and Use

- Compressed breathing air to meet requirements for Type 1 - Grade D air
- Requirements apply to cylinders and compressors

Keep a copy of the analysis report on file for review, if needed



## (j) Identification of Filters, Etc.

- Must be NIOSH labeled and color coded
- Label must not be removed





# AIR PURIFYING ELEMENTS

- Particulate filter for particulates
- Chemical cartridge for gases and vapors
- Combination for both particulates and gases and vapors

# PARTICULATE FILTER



Air flowing through a particulate filter



# CHEMICAL CARTRIDGES

- Filled with a sorbent material. Gas or vapor molecules stick to the sorbent material.



## (k) Training and Information

- Provide to employees required to use respirators on the job
- Prior to use, annually, and as-needed
- Topics to be covered are listed in the standard
- Training must be understandable
- Appendix D must be provided to **voluntary users**

# Appendix D must be provided to voluntary users

**Employers may exclude from the  
Respiratory Program those  
employees who use a filtering  
type respirator in an  
atmosphere where  
No Hazard Exists.**



## (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designated to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Note: Authority cited: Section 142.3 Labor Code. Reference: Section 142.3, Labor Code  
History

1. New appendix D to section 5144 filed 6-25-88; operative 11-23-88 (Register 88, No. 36)

# (1) Program Evaluation

- Evaluate workplace as often as necessary
- Include consultations with employees as part of the evaluation



# (m) Record keeping

- Medical evaluation records
- Fit test records
- Written program
- Records to be accessible to employees and Cal/OSHA



## (n) Dates

- Effective date is Nov 23, 1998
- May 22, 1999: compliance with all provisions



# Appendices

- A Fit Testing Procedures
- B-1 User Seal Check Procedures
- B-2 Respirator Cleaning Procedures
- C OSHA Respirator Medical  
Evaluation Questionnaire
- D Information for Respirator Users
  - » When Use Not Required

QUESTIONS ???

